UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,742	06/20/2001	Zhan He	1101.011	5585

26665 7590 02/22/2005

REVEO, INC.
3 WESTCHESTER PLAZA
ELMSFORD, NY 10523

EXAMINER	
PERALTA, GINETTE	
ART UNIT	**PAPER NUMBER**
2814	

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AL

Office Action Summary	Application No.	Applicant(s)
	09/885,742	HE ET AL.
	Examiner	**Art Unit**
	Ginette Peralta	2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) *32-37* is/are withdrawn from consideration.

5)☒ Claim(s) *28-31* is/are allowed.

6)☒ Claim(s) *1-13,18-27 and 38* is/are rejected.

7)☐ Claim(s) *14-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-8, 20-21, and 38 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-40 of U.S. Patent No. 6,710,541 B2 in view of Yokoyama et al. (U. S. Pat. 6,507,379).

Regarding claim 1, He et al. discloses in claims 1 and 12, which depends from claim 1, a light source that comprises a cholesteric liquid crystal polarizing device, an organic electroluminescent device; and a microcavity from which microcavity resonance may be achieved, wherein the microcavity has a characteristic microcavity length.

He et al. discloses the claimed invention with the exception of specifying that the light source is a backlight for a liquid crystal display.

Yokoyama et al. discloses in Fig. 5, and embodiment 4, a backlight for a liquid crystal display that comprises an organic electroluminescent device 11; and a cholesteric liquid crystal polarizing device 13; wherein a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device is used as a backlight for a liquid crystal display for the disclosed intended purpose of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the light source of He et al. could be used as a backlight for a liquid crystal display device, as Yokoyama et al. discloses that it is beneficial to use a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device as a backlight for a liquid crystal display for the disclosed intended purposes of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the

comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Regarding claim 2, He et al. discloses in col. 2, lines 58-61 that the polarized light source has a theoretical maximum light efficiency of 100%, and Yokoyama et al. discloses in col. 15, lines 40-47 that in the embodiment 4 all of the light that would otherwise fail to pass through the polarizing plate and be absorbed can be supplied by optical modulation and results in an image twice as bright, and, thus, theoretically the maximum light efficiency of the backlight unit is about 100%.

Regarding claim 3, He et al. as modified by Yokoyama et al. above discloses a liquid crystal display comprising the backlight device of claim 1.

Regarding claim 4, He et al. discloses in Fig. 1 that the organic electroluminescent material layer 102 is superposed between a cathode 101 and an anode 103 (col. 4, lines 59-64). Furthermore, Yokoyama et al. discloses that the organic electroluminescent device comprises an organic electroluminescent material layer 112 superposed between a cathode and an anode layer, 111 and 113.

Regarding claim 5, He et al. discloses in col. 4, lines 59-64 that the cathode is a metal, and that the anode is indium tin oxide. Furthermore, Yokoyama et al. discloses that anode layer 111 is the same material as layer 101, which comprises indium tin oxide and cathode layer 113, comprises the same material as layer 105, which comprises a metal.

Regarding claim 6, He et al. discloses in Fig. 1 that the cathode 101 and the anode layer 103 are connected to a power supply. Furthermore, Yokoyama et al. discloses that the cathode and the anode layers are connected to a power supply (col. 8, ll. 29-31).

Regarding claim 7, He et al. discloses that the cholesteric liquid crystal polarizing device is a broadband polarizing device (col. 3, lines 29-32).

Regarding claim 8, He et al. discloses that the cholesteric liquid crystal polarizing device is a narrowband polarizing device (col. 3, lines 29-32).

Regarding claim 20, He et al. discloses that the light source may further comprise a birefringent retarder layer, the birefringent retarder layer being disposed within the microcavity (col. 5, lines 59-67).

Regarding claim 21, He et al. discloses in Fig. 4, and in col. 6, lines 25-28 that the microcavity length is the optical path-length from the cathode through the organic electroluminescent material, the anode layer, and the birefringent retarder layer to the cholesteric liquid crystal polarizing device.

Regarding claim 38, He et al. discloses in claims 1 and 12, which depends from claim 1, a light source that comprises a cholesteric liquid crystal polarizing device, an organic electroluminescent device; and a microcavity from which microcavity resonance may be achieved, wherein the microcavity has a characteristic microcavity length.

He et al. discloses the claimed invention with the exception of specifying that the light source is a backlight for a liquid crystal display.

Yokoyama et al. discloses in Fig. 5, and embodiment 4, a backlight for a liquid crystal display that comprises an organic electroluminescent device 11; and a cholesteric liquid crystal polarizing device 13; wherein a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device is used as a backlight for a liquid crystal display for the disclosed intended purpose of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the light source of He et al. could be used as a backlight for a liquid crystal display device, as Yokoyama et al. discloses that it is beneficial to use a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device as a backlight for a liquid crystal display for the disclosed intended purposes of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the

comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

3. Claims 9-13, 18, 22-27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-40 of U.S. Patent No. 6,710,541 B2 in view of Yokoyama et al. and Faris et al. (U. S. Pat. 6,188,460).

Regarding claims 9, 20, 22, He et al. discloses in claims 1 and 12, which depends from claim 1, a light source that comprises a cholesteric liquid crystal polarizing device, an organic electroluminescent device; and a microcavity from which microcavity resonance may be achieved, wherein the microcavity has a characteristic microcavity length; and a birefringent retarder layer disposed within the microcavity.

He et al. discloses the claimed invention with the exception of specifying that the light source is a backlight for a liquid crystal display, and the cholesteric liquid crystal polarizing device including a plurality of pixel regions.

Yokoyama et al. discloses in Fig. 5, and embodiment 4, a backlight for a liquid crystal display that comprises an organic electroluminescent device 11; and a cholesteric liquid crystal polarizing device 13; wherein a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device is used as a backlight for a liquid crystal display for the disclosed intended purpose of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection

of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the light source of He et al. could be used as a backlight for a liquid crystal display device, as Yokoyama et al. discloses that it is beneficial to use a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device as a backlight for a liquid crystal display for the disclosed intended purposes of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Faris discloses in Fig. 3A1, and 3A2, a liquid crystal display device that comprises a backlight device and a cholesteric liquid crystal polarizing layer, wherein the structure comprises a plurality of pixel regions, wherein a cholesteric liquid crystal polarizing layer is used in the backlight of a liquid crystal display in response to the drawbacks of prior art color LCD panel design, and in order to improve the light transmission efficiency of the panel and thus the brightness of images produced

therefrom, and improving an LCD display by using tuned cholesteric liquid crystal (CLC) polarizers to replace absorptive dyed (neutral or dichroic) polarizers of prior art LCD panels to improve color purity, and a partial (i.e. local) light recycling scheme in order to improve the brightness of the LCD panel. Furthermore, Faris discloses an LCD panel comprising a plurality of pixel regions for the disclosed intended purpose of providing a backlighting structure to a section of the LCD panel where both spatial intensity and spectral filtering of the transmitter polarized light simultaneously occurs on a subpixel basis, and that at each subpixel location, spectral bands of light not transmitted to the display surface during spectral filtering, are reflected without absorption back along the projection axis into the backlighting structure; and, at a subcomponent level, within the LCD panel, spectral components of transmitted polarized light not used at any particular subpixel structure location are effectively reflected either directly of indirectly back into the backlighting structure as disclosed in col. 2, lines 24-41, and in col. 3, lines 14-31.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a plurality of pixel regions in the cholesteric liquid crystal polarizing device for the disclosed intended purpose of Faris et al. of providing a backlighting structure to a section of the LCD panel where both spatial intensity and spectral filtering of the transmitter polarized light simultaneously occurs on a subpixel basis, and that at each subpixel location, spectral bands of light not transmitted to the display surface during spectral filtering, are reflected without absorption back along the

projection axis into the backlighting structure; and, at a subcomponent level, within the LCD panel, spectral components of transmitted polarized light not used at any particular subpixel structure location are effectively reflected either directly of indirectly back into the backlighting structure as disclosed in col. 2, lines 24-41, and in col. 3, lines 14-31.

Regarding claims 10, 11, and 24, He et al. as modified by Yokoyama et al. and Faris, further discloses that in order to produce high-resolution color images, the spatial period of pixilated arrays is selected to be relatively small in relation to the overall length and height dimensions of the LCD panel; that in a conventional panel each pixel structure is composed of a red subpixel, a green subpixel, and a blue subpixel, as illustrated in Fig. 2A of Faris. And that as shown therein, each red subpixel structure comprises a red band polarizing reflective spectral filtering element 10A which is spatially registered with a first polarization direction rotating element 9A; each green subpixel structure 13B comprises a green-band polarizing reflective spectral filtering element 10B spatially registered with a second polarization direction rotating element 9B; and that each blue subpixel element 13C comprises a blue-band polarizing reflective spectral filtering element 10C spatially registered with a third polarization direction rotating element 9C, as taught by Faris in col. 10, lines 8-23.

Regarding claims 12 and 13, He et al. discloses in col. 4, lines 37-39 that the cholesteric liquid crystal polarizing device may comprise one or more cholesteric liquid crystal polarizing layers.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use either a broadband polarizer or a narrowband polarizer as Faris discloses that these two polarizers are alternatives in a backlighting structure and to have a plurality of pixel regions and an array of red pixels, green pixels and blue pixels which reflect circularly polarized red, green, and blue light, wherein these characteristics are taught for the disclosed intended purpose of forming a structure that is used for reflecting without absorption back along the projection axis into the backlighting structure and thus employing systemic light recycling.

Regarding claim 23, He et al. discloses in claims 1 and 12, which depends from claim 1, a light source that comprises a cholesteric liquid crystal polarizing device, an organic electroluminescent device; and a microcavity from which microcavity resonance may be achieved, wherein the microcavity has a characteristic microcavity length; and a birefringent retarder layer disposed within the microcavity.

He et al. discloses the claimed invention with the exception of specifying that the light source is a backlight for a liquid crystal display, and the cholesteric liquid crystal polarizing device including a plurality of pixel regions.

Yokoyama et al. discloses in Fig. 5, and embodiment 4, a backlight for a liquid crystal display that comprises an organic electroluminescent device 11; and a cholesteric liquid crystal polarizing device 13; wherein a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device is used as a backlight for a liquid crystal display for the disclosed intended purpose of allowing

miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the light source of He et al. could be used as a backlight for a liquid crystal display device, as Yokoyama et al. discloses that it is beneficial to use a light source having an organic electroluminescent device and a cholesteric liquid crystal polarizing device as a backlight for a liquid crystal display for the disclosed intended purposes of allowing miniaturization of the liquid crystal projection device (col. 1, lines 25-44) and using an organic electroluminescent device for the disclosed intended purpose of eliminating the problem that is present when using inorganic electroluminescent devices that projection of a bright image could not be achieved since the light could not be effectively directed into the aperture of the projection lens and the comparatively high drive voltage required by the inorganic electroluminescent device (col. 1, lines 47-57).

Faris discloses in Fig. 3A1, and 3A2, a liquid crystal display device that comprises a backlight device and a cholesteric liquid crystal polarizing layer, wherein the structure comprises a plurality of pixel regions, wherein a cholesteric liquid crystal

polarizing layer is used in the backlight of a liquid crystal display in response to the drawbacks of prior art color LCD panel design, and in order to improve the light transmission efficiency of the panel and thus the brightness of images produced therefrom, and improving an LCD display by using tuned cholesteric liquid crystal (CLC) polarizers to replace absorptive dyed (neutral or dichroic) polarizers of prior art LCD panels to improve color purity, and a partial (i.e. local) light recycling scheme in order to improve the brightness of the LCD panel. Furthermore, Faris discloses an LCD panel comprising a plurality of pixel regions for the disclosed intended purpose of providing a backlighting structure to a section of the LCD panel where both spatial intensity and spectral filtering of the transmitter polarized light simultaneously occurs on a subpixel basis, and that at each subpixel location, spectral bands of light not transmitted to the display surface during spectral filtering, are reflected without absorption back along the projection axis into the backlighting structure; and, at a subcomponent level, within the LCD panel, spectral components of transmitted polarized light not used at any particular subpixel structure location are effectively reflected either directly of indirectly back into the backlighting structure as disclosed in col. 2, lines 24-41, and in col. 3, lines 14-31. Faris further discloses that in order to produce high-resolution color images, the spatial period of pixilated arrays is selected to be relatively small in relation to the overall length and height dimensions of the LCD panel; that in a conventional panel each pixel structure is composed of a red subpixel, a green subpixel, and a blue subpixel, as illustrated in Fig. 2A of Faris. And that as shown

therein, each red subpixel structure comprises a red band polarizing reflective spectral filtering element 10A which is spatially registered with a first polarization direction rotating element 9A; each green subpixel structure 13B comprises a green-band polarizing reflective spectral filtering element 10B spatially registered with a second polarization direction rotating element 9B; and that each blue subpixel element 13C comprises a blue-band polarizing reflective spectral filtering element 10C spatially registered with a third polarization direction rotating element 9C, as taught by Faris in col. 10, lines 8-23.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a plurality of pixel regions in the cholesteric liquid crystal polarizing device for the disclosed intended purpose of Faris et al. of providing a backlighting structure to a section of the LCD panel where both spatial intensity and spectral filtering of the transmitter polarized light simultaneously occurs on a subpixel basis, and that at each subpixel location, spectral bands of light not transmitted to the display surface during spectral filtering, are reflected without absorption back along the projection axis into the backlighting structure; and, at a subcomponent level, within the LCD panel, spectral components of transmitted polarized light not used at any particular subpixel structure location are effectively reflected either directly of indirectly back into the backlighting structure as disclosed in col. 2, lines 24-41, and in col. 3, lines 14-31.

Regarding claim 25, He et al. discloses that the cholesteric liquid crystal device is a broadband polarizing device (col. 3, lines 29-32).

Regarding claims 26, 27, He et al. as modified by Yokoyama et al. and Faris, discloses that the structure further comprises a quarter-wave plate that is disposed on the output side of the cholesteric liquid crystal polarizing device as disclosed in col. 18 lines 14-26 of Faris.

Allowable Subject Matter

4. Claims 28-31 are allowed.

5. Claims 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (571)272-1713. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571)272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GP

Douglas A. Wille

DOUGLAS WILLE
PRIMARY EXAMINER